

**SOUTHWEST FISHERIES SCIENCE CENTER**  
**THIRD QUARTER REPORT-FY 2001**  
For the Period April 1 - June 30, 2001

**SUBMITTED BY:** Lab Director/Division Director/Group Chief: John Hunter, Division Director, Fisheries Resources Division

**Title of Accomplishment or Milestone:** Mako shark assessment.

**Current Status of Accomplishment or Milestone:** An MSY proxy estimate, 200 mt, will be incorporated into the Pacific Fishery Management Council's Highly Migratory Species Fishery Management Plan.

**Background:** The Sustainable Fisheries Act requires an MSY estimate, or proxy thereof, for each management unit species included in a Fishery Management Plan.

**Purpose of Activity:** To examine catch and catch rate data of shortfin mako shark caught in the California driftnet fishery for the purpose of determining levels of sustainable catch from the available population.

**Description of Accomplishment (e.g., to the Center, to Management, and to NMFS Strategic Plan Goals) and significant results:** The California Department of Fish and Game statistical squares from the Southern California Bight were chosen, on the basis of contiguousness of information spatially and across the years 1981-1999, for determining trends of cpue in the driftnet fishery. No trends were found that were consistent with how catches and fishing effort changed. The conclusion was that changes in the catches of predominantly juvenile makos that are taken incidentally in fishing for swordfish does not reflect the status of the stock, which is wide-ranging with boundaries extending far beyond the Southern California Bight (to an unknown extent). The present low level of commercial catch (=63 mt in 1999) from the population fraction available to U.S. fishers is not likely due to overfishing. It is expected that the stock is protected by its adult reproducing segment being unavailable. Hence, MSY was estimated by the proxy of average catch during 1981-1999, i.e., 200 mt.

**Significance of Accomplishment:** Average catch, 200 mt with range 63-403 mt, is a proxy for MSY, and is expected to change as the fishing conditions change. Regardless, it is useful for guiding management.

**Problems:** None

**Key Contact:** David Au (858-546-7071)

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**Title of Accomplishment or Milestone:** Thresher Shark Assessment

**Current Status of Accomplishment or Milestone:** An MSY, averaging 360 mt, was estimated for the common thresher shark taken in the California driftnet fishery. It will be incorporated into the Pacific Fishery Management Council's Highly Migratory Species Fishery Management Plan.

**Background:** The Sustainable Fisheries Act requires an MSY estimate, or proxy thereof, for each management unit species included in a Fishery Management Plan.

**Purpose of Activity:** To examine catch and catch rate data on common thresher shark caught in the California driftnet fishery for the purpose of determining levels of sustainable catch from the available population.

**Description of Accomplishment (e.g., to the Center, to Management, and to NMFS Strategic Plan Goals) and significant results:** Large initial catches followed quickly by California regulations that severely contracted the directed driftnet fishery for thresher shark resulted in catches and catch rates reflecting more the changing management regime rather than population production. Therefore, levels of sustainable catch were estimated directly from the logistic production model, using parameters for maximum population size and intrinsic rate of increase. Maximum population size was estimated utilizing catch rate information from California Fish and Game statistical squares chosen for spatial and temporal continuity of 1981-1999 catches, with assumptions on how population recovery is related to cpue, intrinsic rate, and the production function. The intrinsic rate was estimated independently from demographic parameters. The resulting MSY estimate was from 332 to 385 mt, to be compared with the 306 mt average of recent years. Because of the assumptions in the method, the MSYs are minimal.

**Significance of Accomplishment:** This method for estimating a production function should be useful whenever catch and catch rate information poorly reflect sustainable production from a stock or population. This is an expected situation for sharks that are easily "fished up."

**Problems:** None

**Key Contact:** David Au (858-546-7071)